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taxonomist, large numbers of names present little difficulty because he uses them frequently, but for others it is different. Thus probably not less than 90 per cent. of science workers are "beginners" and the others, outside of their special fields, are also. The writer believes in the recognition of small groups but doubts the necessity of forcing them upon every one. Would it not be feasible to have our floras and faunas in two parts, the first leading to collective groups, the second continuing through the smaller groups?

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FIREFLIES FLASHING IN UNISON

TO THE EDITOR OF SCIENCE: I was much interested in Mr. Fremont Morris's letter regarding the "Fireflies Flashing in Unison" on page 418 of the last volume.

I was employed by the Philippine Bureau of Forestry during 1902 and 1903. In the spring of 1902, I was stationed for some weeks at Pagbilao, Tayabas Province. It is on a small tidewater river about half or three quarters of a mile from Lagimanoc Bay. I had occasion to go across this bay on February 22 and did not return until after dark. As the banca in which I was travelling entered the mouth of the river, I was attracted to the flashing of the flies which appeared in great numbers a short distance above the mangroves which covered both banks of the stream.

The majority of the fireflies were flashing in unison but there were some which did not time their flashes with the majority. The light from the fireflies with the reflection of the light from the water made a very distinct illumination and one never to be forgotten by one who has seen it.

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NEGATIVE RESULTS FROM ATTEMPTED QUEEN BEE MATING IN A DOUBLE TENT INCLOSURE

FOLLOWING out suggestions from previous work of Cole and Miller, Rhode Island, and from bee behavior observations in an artificially lighted double tent at University of Wis-

consin, by the writer, an attempt was made the past season to mate a Virgin queen bee in an available double tent inclosure.

The tent was made of double canvas, 4 feet in diameter, 7 feet high at peak, with about 8 inches space between the canvas walls.

A nucleus, containing workers, drones and a five-day-old virgin was placed in the tent and observations taken.

No natural mating flights occurred. The virgin appeared to fly naturally in the tent, returning unaided to the hive, when removed from the nucleus and thrown into the air. The drones appeared to fly naturally, more so at first than after several days confinement in the tent.

The queen failed to mate. L. V. FRANCE

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SPECIAL ARTICLES

SPECTRUM PHENOMENA DUE TO MOVING MOTES

IN connection with my regular work I incidentally came upon a curious phenomenon which seemed to repay special investigation. To describe it, it will be advantageous to first indicate the disposition of apparatus used, as is done in Fig. 1. Here L is a pencil of white light (preferably from a collimator and wide slit) impinging on the thin cylindrical glass shell G , about 10 cm. in diameter and containing a solution of mercury-potassic iodide, about half an inch deep and not quite concentrated. The rays are thus both refracted and dispersed, and on emerging enter the strong objective of a short-range telescope (magnification above 15) of which PP' is the principal plane and $r'b'$ the narrow spectrum seen in the ocular of the telescope. Properly focusing the latter, the spectrum may be contracted to a vividly colored vertical line.

If now a strong direct-vision grating g is inserted in front of the objective, and the telescope is focused anew, a *sharp* solar spectrum may be obtained. This was a surprise to me, as the cylinder¹ G , though thin and clear, was

¹ The present use of a cylinder as a collimator is well worth noting.